

IN THE CLAIMS:

Claims 17 and 25 through 77 were previously cancelled. Claims 16 and 23 have been amended herein. All of the pending claims are presented below. This listing of claims will replace all prior versions and listings of claims in the application. Please enter these claims as amended.

1. (Previously presented) A method for singulating at least one semiconductor die from a semiconductor wafer, the method comprising:
providing a semiconductor wafer having a body including an active surface and an opposing, bottom surface;
forming at least one trench in the semiconductor wafer body from the bottom surface thereof in alignment with a plurality of streets on the active surface circumscribing a location of at least one semiconductor die; and
cutting from the active surface of the semiconductor wafer body through the semiconductor wafer body with at least one laser beam along the plurality of streets between the active surface of the semiconductor wafer body and the at least one trench.
2. (Original) The method of claim 1, where forming at least one trench in the semiconductor wafer body comprises etching the at least one trench.
3. (Original) The method of claim 2, wherein etching the at least one trench comprises performing a wet etch or a dry etch.
4. (Original) The method of claim 2, wherein etching the at least one trench comprises performing an anisotropic etch or an isotropic etch.
5. (Original) The method of claim 2, further comprising reducing a thickness of the semiconductor wafer body prior to etching the at least one trench.

6. (Original) The method of claim 5, wherein reducing a thickness of the semiconductor wafer body comprises at least one of backgrinding and performing an etch back of the semiconductor wafer body.

7. (Original) The method of claim 2, wherein etching the at least one trench in the semiconductor wafer body comprises etching the at least one trench to a depth of about 60% to about 90% of a thickness of the semiconductor wafer body.

8. (Original) The method of claim 1, further comprising forming the at least one trench to a width greater than a beam width of the at least one laser beam.

9. (Original) The method of claim 1, wherein forming at least one trench in the semiconductor wafer body comprises cutting the at least one trench with at least another laser beam.

10. (Original) The method of claim 9, further comprising reducing a thickness of the semiconductor wafer body prior to cutting the at least one trench.

11. (Original) The method of claim 10, wherein reducing a thickness of the semiconductor wafer body comprises at least one of backgrinding and performing an etch back of the semiconductor wafer body.

12. (Original) The method of claim 9, wherein cutting the at least one trench in the semiconductor wafer body comprises cutting the at least one trench to a depth of about 60% to about 90% of a thickness of the semiconductor wafer body.

13. (Original) The method of claim 9, further comprising traversing the at least another laser beam to impinge the semiconductor wafer body along a path and substantially concurrently traversing the at least one laser beam to impinge the semiconductor wafer body along the same path subsequent to impingement of the at least another laser beam.

14. (Original) The method of claim 9, wherein cutting the at least one trench in the semiconductor wafer body with at least another laser beam comprises substantially concurrently cutting a plurality of laterally adjacent trenches in the semiconductor wafer body with a plurality of laser beams in a single pass across the semiconductor wafer.

15. (Previously presented) The method of claim 14, wherein cutting a plurality of laterally adjacent trenches in the semiconductor wafer body with a plurality of laser beams comprises cutting a plurality of substantially parallel trenches using a plurality of lasers disposed in a row perpendicular to a direction of relative travel between the plurality of lasers and the semiconductor wafer.

16. (Currently amended) The method of claim 15, further comprising cutting a second plurality of substantially parallel trenches using the plurality of lasers after rotationally reorienting either the semiconductor wafer or the row of lasers perpendicular to the direction of mutual relative travel.

17. (Cancelled)

18. (Original) The method of claim 1, wherein cutting through the semiconductor wafer body with at least one laser beam along the plurality of streets between the active surface of the semiconductor wafer body and the at least one trench comprises cutting from the bottom surface of the semiconductor wafer body along the at least one trench.

19. (Original) The method of claim 1, wherein cutting through the semiconductor wafer body with at least one laser beam along the plurality of streets between the active surface of the semiconductor wafer body and the at least one trench comprises cutting a path having a width of less than 80 μm .

20. (Original) The method of claim 19, wherein cutting a path having a width of less than 80 μm comprises cutting a path having a width of about 1 μm .

21. (Original) The method of claim 1, wherein cutting through the semiconductor wafer body with at least one laser beam along the plurality of streets between the active surface of the semiconductor wafer and the at least one trench comprises cutting along at least some of the plurality of streets with a plurality of laser beams in a single pass across the semiconductor wafer.

22. (Previously presented) The method of claim 21, wherein cutting along at least some of the plurality of streets with a plurality of laser beams in a single pass across the semiconductor wafer comprises cutting with a plurality of lasers disposed in a row perpendicular to a direction of relative travel between the plurality of lasers and the semiconductor wafer.

23. (Currently amended) The method of claim 22, further comprising cutting along at least some other of the plurality of streets using the plurality of lasers after rotationally reorienting either the semiconductor wafer or the row of lasers perpendicular to the direction of mutual relative travel.

24. (Original) The method of claim 1, wherein forming the at least one trench comprises forming a plurality of trenches respectively circumscribing locations of a plurality of semiconductor dice.

25.-77. (Cancelled)

78. (Previously presented) A method for singulating at least one semiconductor die from a semiconductor wafer, the method comprising:
providing a semiconductor wafer having a body including an active surface and an opposing, bottom surface;
cutting at least one trench in the semiconductor wafer body from the bottom surface thereof in alignment with a plurality of streets on the active surface circumscribing a location of at least one semiconductor die with at least one laser beam;
cutting through the semiconductor wafer body with at least another laser beam along the plurality of streets between the active surface of the semiconductor wafer body and the at least one trench; and
traversing the at least one laser beam to impinge the semiconductor wafer body along a path and substantially concurrently traversing the at least another laser beam to impinge the semiconductor wafer body along the same path subsequent to impingement of the at least one laser beam.

79. (Previously presented) The method of claim 78, further comprising reducing a thickness of the semiconductor wafer body prior to cutting the at least one trench.

80. (Previously presented) The method of claim 79, wherein reducing a thickness of the semiconductor wafer body comprises at least one of backgrinding and performing an etch back of the semiconductor wafer body.

81. (Previously presented) The method of claim 80, wherein cutting the at least one trench in the semiconductor wafer body comprises cutting the at least one trench to a depth of about 60% to about 90% of a thickness of the semiconductor wafer body.

82. (Previously presented) A method for singulating at least one semiconductor die from a semiconductor wafer, the method comprising:

providing a semiconductor wafer having a body including an active surface and an opposing, bottom surface;

cutting substantially concurrently in a single pass across the semiconductor wafer a plurality of substantially parallel, laterally adjacent trenches in the semiconductor wafer body from the bottom surface thereof in alignment with a plurality of streets on the active surface circumscribing a location of at least one semiconductor die with a plurality of laser beams disposed in a row perpendicular to a direction of relative travel between the plurality of lasers and the semiconductor wafer;

cutting a second plurality of substantially parallel trenches using the plurality of lasers after rotationally reorienting either the semiconductor wafer or the row of lasers perpendicular to the direction of relative travel; and

cutting through the semiconductor wafer body with at least another laser beam along the plurality of streets between the active surface of the semiconductor wafer body and the at least one trench.

83. (Previously presented) The method of claim 82, further comprising reducing a thickness of the semiconductor wafer body prior to cutting the plurality of substantially parallel, laterally adjacent trenches.

84. (Previously presented) The method of claim 83, wherein reducing a thickness of the semiconductor wafer body comprises at least one of backgrinding and performing an etch back of the semiconductor wafer body.

85. (Previously presented) The method of claim 84, wherein cutting the plurality of substantially parallel, laterally adjacent trenches in the semiconductor wafer body comprises cutting at least one trench of the plurality of substantially parallel, laterally adjacent trenches to a depth of about 60% to about 90% of a thickness of the semiconductor wafer body.

86. (Previously presented) A method for singulating at least one semiconductor die from a semiconductor wafer, the method comprising:

providing a semiconductor wafer having a body including an active surface and an opposing, bottom surface;

forming at least one trench in the semiconductor wafer body from the bottom surface thereof in alignment with a plurality of streets on the active surface circumscribing a location of at least one semiconductor die; and

cutting through the semiconductor wafer body with at least a plurality of lasers disposed in a row perpendicular to a direction of relative travel between the plurality of lasers and the semiconductor wafer along at least some of the plurality of streets between the active surface of the semiconductor wafer body and the at least one trench in a single pass across the semiconductor wafer; and

cutting along at least some other of the plurality of streets using the plurality of lasers after rotationally reorienting either the semiconductor wafer or the row of lasers perpendicular to the direction of relative travel.